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AUTHOR Garner, C. William; Cole, Ernest G.
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ABSTRACT

A pilot study was conducted at two middle schools to investigate the relationship among student locus of control, field dependency, self-esteem, and achievement. A relationship between self-esteem and achievement has already been identified by research; another variable considered as a possible effect on a person's predisposition to achieve was locus of control--the degree to which an individual feels that reward follows from personal behavior or endeavor, or that reward is controlled by outside forces. Field independence (extracting data from a field of information by personal cognition) or field dependence (viewing a field of information as a whole and applying it directly) were also considered as possible variables related to achievement. The Nowicki-Strickland locus of control scale for children; the Behavioral Academic Self-Esteem Rating Scale by Coopersmith and Gilberts; and the Group Embedded Figures Test by Oltman, Raskin, and Witkin were administered to 33 students. This pilot study concentrated on the methodology, statistical processing, and testing instruments; the analysis of results and conclusions will form a basis for the primary investigation (currently in process) which is targeting remedial help for academically disadvantaged students. (JD)

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C. William Garner, Chairman and Associate Professor
Department of Vocational-Technical Education
Graduate School of Education
Rutgers University

and

Ernest G. Cole, Education Program Specialist II
Division of Special Education
New Jersey Department of Education

Rutgers University
New Brunswick, NJ 08903

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A Pilot Study on the Congruency of Locus of Control and Field Dependence as Related to Self-Esteem and Academic Achievement

C. William Garner and Ernest G. Cole

Introduction

This pilot study was used as a basis for an investigation concerning the relationship between locus of control, field dependency, self-esteem, and achievement. While the pilot concentrated on the methodology, statistical processing and testing instruments; the primary investigation (currently in process) is targeting the academically disadvantaged.

This pilot was conducted at two middle schools in New Jersey. The seventh and eighth grade students were participants in their school's industrial arts club. Thus, the study was not concerned with a valid sample for drawing conclusive inferences from the findings, but rather with methodological and statistical direction. In achieving this objective, the pilot was very successful.

Background for the Study

In attempts to assist youth in overcoming academic deficiencies, over the years programs have been designed to remediate student weaknesses. The positive effects of these programs with some students but not others has resulted in a search for answers that led investigators from studies of personal variables to socio-economic factors.

With respect to personal achievement, Maslow (1954) proposed that a positive attitude toward oneself was necessary. Later, Coleman, et al., (1966) reported that a child's attitude relates strongly to school achievement, and that his/her self concept and sense of control over the environment--or belief

in the responsiveness of the environment--affects school achievement far more than family background.

With this in mind, research was conducted and programs designed in order to help people overcome negative self-perceptions which, in turn, would hopefully have a positive effect. While research showed a relationship between self-esteem and achievement, and special programmatic efforts have helped some students, there are still others who have not responded positively to this approach for self-improvement.

Another variable considered as a possible effect on a person's predisposition to achieve was locus of control. Rotter (1954) introduced this internal-external locus of control as a function of reinforcement. Later, Rotter (1966) defined this quite specifically as:

> The degree to which the individual perceives that the reward follows from, or is contingent upon, his own behavior or attributes versus the degree to which he feels the reward is controlled by forces outside himself and may occur independent of his own actions (p. 1).

In other words a person with an external locus of control feels he/she is not in control of their destiny, while those with an internal locus feel they are in control. Levenson (1974) added to the understanding of the concept of the locus of control by explaining that:

> ... people who believe the world is unordered would believe and think differently from people who believe the world is ordered but that powerful others are in control... Furthermore, ... a person who believes that chance is in control... is cognitively and behaviorly different from one who feels he himself is not in control... (p. 377).

Thus, Levenson felt that a potential for self-control exists for people who believe the world is ordered even though others are in control.

Another variable that entered this concern about achievement was field dependency. Unlike locus of control, which an expectancy variable, field dependency is a process variable, considered to be bi-polar: a) the way an individual assimilates and cognitively restructures or processes information

in problem solving situations; b) the degree to which an individual relies upon external social cues in formulating interpersonal relationships (Witkin and Goodenough, 1981 and 1977; Witkin, Moore, Goodenough and Cox, 1977).

Field dependency, like locus of control, is considered to be a continuum, and the two extremes are identified as field dependent and field independent. Field independent individuals are considered to be analytical in problem solving, and to be able to extract data from a field of information by cognitively restructuring the field. Field dependent people tend to view a field of information as a whole and apply it directly. At the same time, field dependent individuals tend to be more sensitive to social cues with the corresponding development of stronger interpersonal competencies than field independent individuals (Witkin and Goodenough, 1981 and 1977; Witkin, Moore, Goodenough, and Cox, 1977).

Field dependence, like locus of control, has not shown a consistent relationship to overall academic achievement (Witkin, Moore, Goodenough and Cox, 1977). An approach that suggests these two variables must be viewed in concert was set forth by Lefcourt and Telegoli (1977). Basically, their proposal theorized that locus of control, an expectancy variable, and field dependency, a process variable, could be used to identify "real internals," "real externals," "false internals," and "false externals." Specifically, the "types" of locus of control and field dependent individuals in the four categories are as follows.

Real internals = Internal LOC, Field Independent
Real externals = External LOC, Field Dependent
False internals = Internal LOC, Field Dependent
False externals = External LOC, Field Independent

The real internals and externals were considered by Lefcourt and Telegoli to be "congruent," while the false internals and externals were labeled as incongruent. Recent studies (Jones, 1980; Tobacyk, Baroughton, and Vaught, 1975; Lefcourt and Telegoli, 1971) have indicated that congruent groups demonstrated behaviors which would suggest these individuals are more accepting of themselves.

Methodology

Two middle schools in New Jersey participated in this study. Middle schools were selected due to the implied importance from the literature with respect to the locus of control measures and this age (13-15 years) group.

The advisors of the industrial arts clubs at these two schools used club members for the collection of data (with parental approval). The two schools were located in areas (one urban and one rural) considered to be below average economically with a high number of students below average academically. However, the club members were found to have high scores (above grade level) in the basic skills (which was a concern for club advisors with respect to attracting a broader group of students). There were a total of 33 students (27 males, 6 females) tested at both schools.

The Nowicki-Strickland (1973) locus of control for children; the Behavioral Academic Self-Esteem Rating Scale by Coopersmith and Gilberts; and the Group Embedded Figures Test by Oltman, Raskin and Witkin were administered. The self-esteem, locus of control and achievement data were collected in October 1983 and again in May 1984 along with the field dependency measures.

Analysis

Whereas the field dependency and locus of control scores were viewed in concert to each other, the raw scores from these two tests were converted to "z" scores and then a difference score between the two "z" scores was obtained. At the same time, the scores were plotted on a graph in which locus of control was the "x" axis and field dependency was the "y" axis, which established the following four quadrants: Quadrant I for real internals, Quadrant II for false externals, Quadrant III for real externals and Quadrant IV for false internals.

Findings

Since the pre-test measure of self-esteem was not considered to be a valid measure by the investigators, the pre-test correlations were not computed. From the pre-test data, however, the locus of control was compared to the post-test locus of control scores and no significance difference was found between the two scores taken over the eight month time span.

Using the post-test measures, correlations were checked between locus, self-esteem, reading and math scores. Correlations significant at the .05 level (Peason Product Moment Correlation, non-directional level for significance) were found between math and locus of control, and between reading and self-esteem. The correlation between self-esteem and locus was significant at the .10 level. (Note: Due to the biased sample, no conclusions can be drawn from these correlations, only suggestions for further research.)

With respect to the correlation of the difference between the z scores for the locus and field dependence measures and self-esteem, reading, and math scores (post-test measures); no significant relationships were found. The correlations fell below r = .12, therefore absolutely no direction was suggested.

In the placement of the scores into the quadrants, the following distribution was found: Quadrant I, N=10; Quadrant II, N=4; Quadrant III, N=11; Quadrant IV, N=8. Since the self-esteem ratings were high overall and the math and reading scores were nearly all above grade level (none were one grade level below the actual grade), no statistical analyses were conducted on this data except as reported above. However, the self-esteem measures were identified by quadrant with respect to being above or below the average for the scores for the two groups. Those falling below average by quadrant are as follows:

Quadrant I	2 out of 10
Quadrant II	3 out of 4
Quadrant III	6 out of 11
Quadrant IV	2 out of 8

Conclusions

The following conclusions from this pilot study are as follows:

1. The correlations between locus of control, self-esteem, and math and reading scores exhibited either a significant correlation or at least a strong positive relationship. While conclusions cannot be drawn from these findings due to an inadequate sample structure, they do support previous research findings which indicated that a relationship exists between locus of control, self-esteem, and achievement.
2. The difference between the z scores for locus of control and field dependency did not provide any indication of a relationship between these scores used in concert with each other, and self-esteem or achievement. The data indicated that further research is needed with respect to the relationship of these difference scores by quadrant and self-esteem.
3. Since 9 out of 13 self-esteem scores which fell below the average in this study were found in Quadrants II and III, further research is needed with respect to the internal and external locus of control scores being treated as two groups to check for significant differences in self-esteem ratings and/or correlations with self-esteem ratings.
4. While this pilot focused on locus of control, field dependency appeared to play a role with respect to self-esteem and achievement. Since the students tested in this pilot were not experiencing problems academically, follow-up study is needed between achievers and non-achievers, and field dependency and self-esteem.

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